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NOTES ON THE MIGRATIONS OF BIRDS.

BY H. D. MINOT.

LITCHFIELD is in the highland of Western Connecticut, from nine hundred to twelve hundred feet above the sea, somewhat sparsely wooded, though well watered by southerly streams, running either into the Naugatuck valley or into the system of Bantam lake (the largest body of fresh water in Connecticut, with an area of about twelve hundred acres). My observations there extended from October, 1880, to May, 1881, inclusive of both months, and suggested to me, concerning:¹

(1) *Pioneer migrants*: that the single temporary forerunners of a species, so often observed among early non-gregarious migrants before the arrival of their fellows in numbers, may serve more than a purely individual purpose. A single record will illustrate: April 1st I observed by a particular bridge the first pewee, dejected, silent or petulant, and hurried, soon flying out of sight *southward*; for a week no pewees were to be seen or heard there or anywhere about; April 8th was pewee-day, bringing these birds in numbers, and at the bridge appeared a triumphant pewee with his mate.

(2) *Local differences of time*.—Migrant cat-birds appeared in outlying swamps a week or more before the resident cat-birds returned to their village home; and king-birds appeared down

¹ Before remarking on migrations here, I append the following dates of arrival: March 12, blue birds (in numbers); 15, song sparrow, *snow bird*, fox sparrow, red-winged blackbird and rusty grackle; 25, meadow lark; April 1, the first pewee; 3, horned larks; 9, downy woodpecker; 20, white-breasted swallow, Savannah sparrow, bay-winged sparrow, cow bird and kingfisher; 22, hermit thrush; 23, red-poll warbler, martins, swamp, field and chipping sparrows, yellow-bellied woodpecker (among hemlocks) and golden-crowned kinglet (absent latterly in winter); 24, ruby-crowned kinglet (singing), yellow-rumped warbler, barn swallow, solitary vireo, and purple finch, and goldfinch (after a long absence); 28, brown thrush, creeping warbler (*Mniotilta*), white-throated sparrow (earlier?) and towhee; May 1, orchard flycatcher (*Empidonax minimus*—the first appeared April 27); 3, Swainson's thrush (a pair in a pasture (!) by a rill), cat-bird, oven-bird, yellow warbler, and king-bird; 5, house wren; 6, Wilson's thrush and redstart; 7, warbling vireo; 8, chestnut-sided warbler, Maryland yellow-throat, Baltimore oriole (abundant next morning), "night hawk" (in the village) and wood thrush (probably); 9, Nashville warbler, "blue yellow-back," etc., red-eyed vireo, rose-breasted grosbeak, bobolink and Traill's flycatcher; 10, wood pewee and whippoorwill; 12, cedar-birds; 13, yellow-throated vireo and black-and-yellow warbler (or earlier); 14, scarlet tanager; 15, black-billed cuckoo, and so on. Blue birds had eggs in the last week of April; robins and pewees began to lay about May 1st.

by the lake, three miles off, several days before advancing to the outskirts of the much higher village. *The most favorable haunts are the first revisited.* Local differences of season, too, are very considerable: April 30, a visit to Bethlehem, nine miles southward, showed a week's advance.

(3) *The great influence of season and the comparatively little influence of temporary weather* (except on water fowl).—Crows moving southward in large bodies in the latter part of October, predicted to me a severe winter. It proved one of extraordinary and almost uninterrupted severity, without any midwinter thaw. In the first week of March these crows returned (three hundred debating one afternoon whether to roost in Litchfield woods or to pass on), our first spring weather forthwith followed, and real winter did not reappear. Snow-birds (*Junco hyemalis*) were absent all winter, following southward the unusually extended and steady line of frost and snow; and nuthatches and most of their kindred were absent during the latter or stormy part, marked especially by ice-storms. On the other hand, some warblers, after a month of bright, lovely weather, waited to appear in the face of the cold, blustering, lasting northeaster that set in May 16. In spring, moonlight is taken advantage of by birds like water-fowl, that make long voyages in long flights; but it affects little our insessorial birds, who, however much they may profit by the harvest moon in autumn, in spring are more strongly impelled to migrate, and reappear pretty regularly, independently of the lunar calendar. For instance, at home I have noted the arrival of a particular pair of Wilson's thrushes year after year, between the 5th and the 10th of May, often coming apparently in the night, however young or old the moon might be. No doubt, however, as I have even detected sometimes, migrants that seem to have come in the night, often arrive in the evening, simply traveling till a late hour of the day before resting, and the next morning may linger for refreshment before resuming their journey. In building, on the contrary, activity is in the morning.

(4) *The uncertain order of species.*—In spite of pretty regular habits of migration among the later comers, accidental circumstances produce such variations that there is no certain order or procedure among the different kinds, even near relations. Whether the chipping or the field sparrow (*Spizellas*) will appear first in a given locality where both are common, who can safely predict?

(5) *The routes of New England migrants.*—In visiting Lenox, Berkshire county, Massachusetts, several years in April, I have been astonished to find that though so high (1200–1300 feet above the sea), and in spring so bleak and backward, it gets some of its birds (for instance, bay-winged and chipping sparrows) before either Boston on the coast or Litchfield, lower and over forty miles more south—as I have determined by returning to these places from Lenox, and making immediate comparison. 1881—Bay-winged sparrows in full song at Lenox, April 16; I returned to Litchfield two days later, but found none till the 20th. The configuration of the country, in connection with such observations, seems to show that many birds follow the coast and rivers, ascend broad valleys sooner than narrow, and thence spread up the slopes and hills, perhaps escaping occasionally through gaps where water-courses nearly meet, from one basin to another. Therefore migrants, especially those hurrying, are comparatively few, or wanting, along high ridges—as exemplified at Litchfield by the scarcity in spring of warblers of the Canadian fauna.

(6) *The effects of elevation on the ornithological calendar.*—Though comparisons of full value should be based upon simultaneous and repeated observations, I venture the conclusions (illustrated by my list of dates, based upon daily search) that Litchfield, as compared with Boston, is, from its elevation, backward in its spring, and in getting the earlier migrants, but that when, after a few hot days, it suddenly gets its summer with wonderful rapidity, it gains from being nearer the south-west sources of migration, and gets its later resident birds—for instance, the wood pewee—sooner.

(7) *Local variations.*—Such are the autumn congregation of over a dozen golden-winged woodpeckers in a flock, and the singing of field sparrows and of redstarts here often with a falling instead of a rising inflection. Such specific variations as red-winged blackbirds, in their spring chorus, congregating commonly in one tree, while the rusty grakels often each take a tree top or limb for himself, and such individual variations as a nuthatch cracking open a hard nut (probably for a maggot) are also curious.

I subjoin here, though the evidence is not complete, the records of a Tennessee warbler, May 6, 1881, and of a black-and-yellow warbler nesting. Martins, a gentleman here tells me, kill interlopers of their own species, cracking the skull.